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REMARKS

In this Amendment after Final, only claim 1 is being amended. Claims 1 to 18 are pending. Entry of this amendment, and reconsideration and continued prosecution of this application, is respectfully requested.

§ 102 Rejections

In the final Office Action, claims 1, 9, and 13 were rejected again as being anticipated (35 USC § 102(b)) by U.S. Patent 6, 155, 699 (Miller et al.). The Examiner reasoned that Miller et al. discloses at column 3 lines 10-15 thereof a first optical component, which includes a wavelength selective reflector 30 and phosphorescent layer 36, being formed over a second optical component (LED 12), one optical component therefore "being positioned" over the other optical component as shown in FIG. 3 of Miller et al.

In response, Applicants first wish to point out that just because one thing ("X") is formed over another thing ("Y"), that does not mean the combination was made by a method that included the step of *positioning* X in relation to Y. For example, an artist may brush layers of different colored paints onto a canvas in the process of making a fine portrait, but one would not say that the artist employed the step of "positioning" the image formed by the layers of paint in relation to the canvas.

Nevertheless, in order to make even more clear that the "positioning" step of claim 1 is a separate step that occurs after the "forming" and "providing" steps, Applicants have amended the claim to specify that "the positioning step is performed after the forming and providing steps". Support for the amendment can be found at least at page 5, lines 4-12, or page 11, lines 8-15, of the original specification. No new matter has been added. With this amendment, claim 1 clearly distinguishes over Miller et al., who forms the wavelength selective reflector (*in situ*) over the encapsulating layer, and forms the phosphorescent layer (*in situ*) over the wavelength selective reflector.

Two potential benefits associated with the method of claim 1 are set forth on page 11, lines 14-15: simplified manufacturing, and increased overall yields. With regard to manufacturing, by making the phosphor-reflector assembly separately and then later "positioning" it to receive light

from the LED, one may choose to manufacture the phosphor-reflector assembly in a simple coating operation on a roll good as shown in FIG. 3, and then placing a piece of the coated film in proximity to an LED. With regard to yields, if a particular piece of phosphor-reflector assembly is defective, one may choose to discard it *before* combining it with an LED. In contrast, if the wavelength selective reflector or phosphorescent layer of Miller et al. is defective, not only those components but also the LED on which they were formed must be discarded, reducing the overall yield rate.

Since Miller et al. does not teach all the elements of amended claim 1, the rejection of claims 1 and its dependent claims 9 and 13 under 35 USC § 102(b) should be withdrawn. Regarding claim 9, the embedding referred to there occurs within the "forming" step of claim 1, which in turn occurs before the "positioning" step of claim 1. Such process can be used to produce a component for convenient (and later) mating to an LED as shown in FIG. 15. Nothing of the kind is taught in Miller et al.

§ 103 Rejections

Claims 2-8, 10-12, and 14-18 were rejected as obvious (35 USC § 103(a)) over Miller et al. in view of a variety of secondary references, including U.S. Patents 6,172,810 (Fleming et al.), 6,583,930 (Schrenk et al.), and 5,813,753 (Vriens et al.).

In response, none of the secondary references remedy the deficiency noted above regarding Miller et al. in connection with independent claim 1, and since the remaining rejected claims all depend directly or indirectly from claim 1, the obviousness rejections should be withdrawn as moot.

Although the rejections are moot, the following points are noted:

- With respect to claim 2, the alleged motivation to combine the polymeric reflectors of Fleming et al. with the optical component of Miller et al. is "for the advantage of providing on a flexible substrate and conforming to the optical component on which it is applied". Such motivation however is based on improper hindsight, since there is nothing in Miller et al. indicating that the encapsulant 28, on which the DBR mirror 30 is formed, is flexible.

- Moreover, Fleming et al. is non-analogous art. For purposes of evaluating the obviousness of a claim, each reference relied upon must constitute "analogous art". See MPEP§2141.01(a)(1). In this regard, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. See Id.

The Fleming et al. reference is not in the field of applicant's endeavor. Fleming et al. is directed to retroreflective articles that have the ability to redirect incident light back towards a light source, such as road signs, barricades, license plates, safety vests, jogger's shoes, and canvas-sided trucks. See col. 1, lines 10-20. Applicants' field of endeavor is phosphor-based light emitting diode (LED) light sources. Retroreflective articles and phosphor-based LED light sources are not the same field of endeavor. One of skill in the phosphor-based LED light source art would not consult the retroreflective art when trying to solve a phosphor-based LED light source problem. Thus, the Fleming et al. reference is not in the field of applicant's endeavor.

Nor is the Fleming et al. reference reasonably pertinent to the particular problem with which the inventors were concerned. The inventors were concerned with, among other things, improvements relating to phosphor-based LED light sources. Problems associated with retroreflective articles are different than problems associated with phosphor-based LEDs. For example, selecting reflector materials that can withstand the energy flux of both the LED and the phosphor layer and the elevated operating temperatures of a phosphor-based LED are not problems encountered with retroreflective road signs, barricades, license plates, safety vests, jogger's shoes, and canvas-sided trucks. Thus, one would not be reasonably expected or motivated to look to the retroreflective arts for improving phosphor-based LEDs. Since Fleming et al. is neither in the field of applicants' endeavor, nor reasonably pertinent to the problem with which the inventors were concerned, it is non-analogous art.

- With respect to claim 3, the alleged motivation that "polymeric multilayer reflectors are more resistant to water, acids, bases, corrosion, and other environmental degradation thus improving the lift of the display" is also based on improper hindsight, since the DBR mirror 30 of Miller et al. is shown to be sandwiched between encapsulating layer 28 on one side and phosphorescent layer 36 and lens 22 on the other side (FIGS. 2 and 3), thus presumably being already shielded from such environmental degradation.
- With respect to claim 6, the passage referred to in Fleming et al. (col. 7 lines 55-64) relates to the "polymer layers used in the reflective coating", and "optical elements of retroreflective articles", whereas the lamination referred to in claim 6 relates to the phosphor material.
- With respect to claim 5, the alleged motivation to substitute a multilayer interference reflector comprising birefringent layers as taught by Schrenk et al. for the multilayer reflector of Miller et al., "to polarize and reflect only a narrow wavelength range while remaining transparent to the remaining portion of the incident light", is based on improper hindsight, and lacks a reasonable expectation of success. Miller et al. is completely silent regarding polarization. Moreover, a multilayer reflector that polarizes incident light would transmit the orthogonal polarization, resulting in a reduced overall reflectivity and reduced brightness in the application of Miller et al.
- With respect to claim 4, the Examiner is mistaken by asserting that Vriens et al. discloses "phosphor grains mixed with adhesive epoxy". Vriens et al. uses the term "epoxy", not "adhesive". Applicants refer to the Encyclopedia of Polymer Science and Engineering (John Wiley & Sons, 1986) on the topic of "Epoxy Resins". This reference demonstrates that epoxies are *only sometimes* (and not predominantly) used as adhesives:

> "Epoxy resins were first offered commercially in 1946 and are now used in a wide variety of industries. Of the 135 metric tons sold in the United States in 1983, 45% (60 t) were used in protective coatings, and the remainder (75 t) in structural

applications such as laminates and composites, tooling, molding, casting, construction, bonding and adhesives, and others."

Encyclopedia of Polymer Science and Engineering (John Wiley & Sons, 1986) at p. 322.

- With respect to claim 8, the Examiner argues that it would have been obvious to one of ordinary skill to utilize the short-wave-pass filter 47 of Vriens et al. in the light-emitting device of Miller et al. so that visible light emitted by the phosphor material in the direction of the LED is reflected by this filter towards the viewing side to enhance light intensity. This reasoning is clearly erroneous and based on improper hindsight, since the DBR mirror of Miller et al. *already performs this function* – see col. 3 line 61 to col. 4 line 9 of Miller et al. ("... some of the secondary light is emitted back toward the GaN die, impinging upon the DBR mirror. The DBR mirror reflects much of this secondary light ...").
- With respect to claim 14, Applicants disagree that Vriens et al. teaches a "discontinuous layer of phosphor material", as that term is used in the present claims. The present specification does not teach that a layer becomes discontinuous simply because phosphor particles are dispersed in a binder material. On the contrary, for example, Applicants describe layer 22 of FIG. 2 (composed of one or more phosphor materials mixed with a binder) as a "substantially uniform phosphor layer". See e.g. FIGS. 2-3, and the present specification at page 3 lines 1-23 and page 9 line 14 to page 10 line 3. Compare the discussion of discontinuous phosphor layers on page 19 lines 6-25 of the present specification. Clearly, Vriens does not disclose any discontinuous layer of phosphor material.
- With respect to claim 18, in making the rejection the Examiner incorrectly associates the recited "mating" procedure with the "forming" step of claim 1, rather than the "positioning" step of claim 1. After acknowledging that neither reference teaches the recited "mating", the Examiner rejects claim 18 nonetheless with the bald assertion that "it would have been [an] obvious matter of design choice since the applicants have not disclosed that this ... mating solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with

the method of forming the light source as disclosed by Miller ...". Applicants respond that even if no particular problem or purpose were disclosed in connection with the mating procedure, the Examiner would still be required to show with particularity why it would have been obvious to the person of ordinary skill to modify the references in the claimed manner in order to establish a *prima facie* case of obviousness. See MPEP § 2143. The Examiner has not met this burden. Furthermore, the specification does in fact discuss benefits that may be realized by the claimed manufacturing method, e.g. the simplified manufacturing and the improved yields discussed above.

The rejections of claims 2-8, 10-12, and 14-18 under 35 USC § 103(a) have been overcome and should be withdrawn.

CONCLUSION

The rejections of all pending claims have been fully addressed by the above amendment and remarks. Entry of this amendment, which is believed to put the application in condition for allowance for the reasons given, is respectfully requested.

Respectfully submitted,

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